school furnishes specific opportunities for infection in the friendly exchange of pocket-handkerchiefs, lead-pencils, and chewing gum. The discharge of minute droplets of spray from the mouth or nose during sneezing or coughing is also a danger difficult to guard against. The school playground as well as the school-room must be considered as having a bearing on school diseases. A wide divergence of opinion exists as to the actual proportion of cases contracted through the agency of the school. Conditions are not alike in all infectious diseases, particularly in measles, scarlet fever, and diphtheria. Investigations by Kingsford in Liverpool and Roger in America tend to emphasize the importance of school attendance in spreading measles. Scarlet fever seems to be less generally considered a school disease. Many investigations point to the milk supply as a prominent factor in spreading the disease, and there is a growing disbelief in the importance of school infection. In the case of diphtheria, while there is a difference of opinion, still there are numbers of outbreaks of the disease reported in which the connection with school attendance could not be doubted. In this disease the "diphtheria carrier" plays the important role in school infection, and when school attendance is regulated by bacteriologic findings, school epidemics quickly subside.

Reinspiration of Expired Air.—CROWDER, (*Archiv. Int. Med.*, October, 1913, xii, 420–451) has made a study of the reinspiration of expired air. By this phenomenon is meant the immediate reinspiration of a portion of our expired breath. This occurs quite commonly, in fact, may almost be regarded as a normal accompaniment of respiration during the major part of our lives. Lehman ("Der Kohlensäuregehalt der Inspirationsluft im Freien und im Zimmer," *Arch. f. Hyg.*, 1899, xxxiv, 315) and also Heymann ("Ueber den Einfluss wieder eingeathmeter Expirationsluft auf die Kohlensäure-Abgabe," *Zeitsch. f. Hyg.*, 1905, xlix, 388) determined the CO_2 of the inspired air, compared this with the CO_2 of the surrounding air, and from the difference computed the proportion of the breath which was reinspired. They found this proportion to vary greatly. It was sometimes more than 6 per cent., but dropped to zero in the open air, and in a breeze of 3 meters per second. Crowder confirms these observations and extends them much further. He shows that under many conditions the air about the face contains much more CO_2 than the surrounding air. The path of the expired air may roughly be seen by watching the course of smoke blown from the nostrils. The expired air leaves in a cone-shaped expansion, part of which lies quite close to the body, and then rises slowly by convection currents. Inspiration follows expiration immediately, therefore every chance is offered for some of the expired air to be again drawn in, except when facing a breeze of from 200 to 300 feet per minute, or when walking, riding, or fanning. When the back is turned to a breeze a little of the expired air is often reinhaled in spite of the current. The position of the head influences the amount of air rebreathed. Thus Crowder has shown that while sitting upright the reinspiration was 2.3 per cent.; lying down with a pillow tilting the head forward, 1.3 per cent.; lying flat, head thrown back, none at all. In the ordinary position in bed, with the head on the side and flexed, with pockets or dead spaces for the air to stagnate, there will be a greater retention of expired air. This occurs especially when the head sinks into a soft pillow. It may be concluded that when one lives indoors and remains quiet he will immediately rebreathe from 1 to 2 per cent. of his own expired air; in bed it will be more, from 1 to 5 per cent., and even 10 to 18 per cent., depending on the position in which he lies. Nor does sleeping in the open insure pure air for breathing, especially when one buries his head between pillows and bedclothes for the sake of warmth. The significance of respiration and its mechanism with reference to the phenomenon of reinspiration of expired air is reviewed in a masterly way. The factor of safety indicates that slight amounts of CO_2 in excess may be compensated for and probably are not deleterious. It is again shown that a good system of ventilation requires cool, moving air with a proper humidity in order to maintain the thermic balance of the body and to stimulate its chemical activity. "A little extension of the dead space beyond the tip of the nose is of no consequence."

PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF

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Tissue Metaplasia in Grafts.—SMITH (*Jour. med. Research., August,* 1913, xxviii, No. 3) reports the results of interchanging epithelial linings from one organ to another. Thus he grafts the gall-bladder lining upon the urinary bladder, and *vice versa,* as well as utilizing the uterine covering in both organs. The epithelium of the gall-bladder and uterus became replaced in the urinary bladder by a transitional epithelium, and the epithelium of the urinary bladder and uterus was replaced by the columnar epithelium of the gall-bladder when transplantation was made into that organ. This is doubtless due to the fact that the regional epithelium is in a better position for proliferation than the graft epithelium, and Smith does not attempt to suggest that an actual transformation from one type of cell to another occurs. When the epithelial tissue of two types is transplanted side by side into the peritoneal cavity, a cyst is formed in which both tissues independently take part, and in which neither one displaces the other. When invasion and replacement of one epithelial tissue by another takes place, as in the foregoing experiment, Smith thinks that the environmental conditions act unfavorably upon the one, and favorably upon the other. This is exactly what might have been expected; nevertheless we mention the subject because of the ingenious methods which are used to provide the proof.